Remarks

The Applicants have amended Claim 35 to simplify the preamble and place Claim 35 into final condition for allowance. Claim 35 has further been amended to recite that the detector insertion portion has a passageway and extends substantially vertically from a middle portion of the lubricant passage, into which passageway the detector is inserted. Support may be found in Fig. 1 wherein a vertically oriented passageway extends along joint portion 2b, coupling 3 and socket 5. Claim 35 has further been amended to recite that the detector is disposed such that the first end portion of the detector is fixed to the top portion detector insertion portion, a middle portion extends along the passageway and a second end portion is positioned in the lubricant passage without restraint. Support for this portion of Claim 35 is also found in Fig. 1 wherein a middle portion of the detector extends along the aforementioned passageway. Entry into the official file is respect requested.

Claim 35 stands rejected 35 USC §103 over Forster. The Applicants note with appreciation the Examiner's detailed comments hypothetically applying Forster against Claim 35. The Applicants nonetheless respectfully submit that Forster is inapplicable to Claim 35 for the reasons set forth below.

The Applicants first note with appreciation the Examiner's frank acknowledgement that Forster does not teach a lubricant-feed-state monitoring sensor directly associated with a device fed with oily or fatty lubricant or a lubricant feed pipe or feeding lubricant to the device, the sensor comprising a T-shaped member having a lubricant passage connected to the lubricant feed pipe and a detector insertion portion extending substantially vertically from the middle portion of the lubricant passage. The Applicants agree. The rejection also notes that the structure of the

sensor cited in Forster is capable of performing the intended function of the sensor. The Applicants respectfully submit that performing the intended function is not pertinent to the determination of obviousness based on the claimed structure recited in Claim 35. It is not the intended function that is important, but the Applicants' claimed structure. The Applicants respectfully submit that the claimed structure is in fact quite different in any event not obvious over Forster.

In that regard, the Applicants respectfully submit that Forster fails to provide a structure that discloses, teaches or suggests a T-shaped member having a lubricant passage connected to a lubricant feed pipe and a detector insertion portion having a passageway and extending substantially vertically from a middle portion of the lubricant passage into which passageway a detector is inserted, wherein the detector is disposed such that the first end portion of the detector is fixed to a top portion of the detector insertion portion, a middle portion extends along the passageway and a second end portion is positioned in the lubricant passage without restraint. The rejection relies in particular on Figs. 2C and 4B for structure that is similar to that of the Applicants. However, there are serious deficiencies associated with that structure. In the case of Fig. 2C, there is no T-shaped structure and, therefore, inherently no corresponding structure from Claim 35 as recited in that claim.

Thus, the rejection turns to Fig. 4B. However, that structure is also fatally deficient in that there is no disclosure, teaching or suggestion of a detector insertion portion having a passageway into which passageway a detector is inserted and wherein a middle portion of the detector extends along the passageway. Careful scrutiny of Fig. 4B shows that there is an end portion positioned in the lubricant passage without restraint. However, there is no middle portion extending along a passageway which extends substantially vertically from a middle

portion of the lubricant passage. To the extent that there is a middle portion of the detector in Fig. 4B, that middle portion is located in the lubricant passage, not in the passageway extending substantially vertically from the lubricant passage. To the extent that there is a passageway in Fig. 4B, which would be the passageway on the left hand side of the lubricant passage, that passageway contains an end portion of the detector, not a middle portion of the detector. Therefore, there is no disclosure, no teaching and no suggestion of the Applicants' claimed passageway extending substantially vertically from the lubricant passage into which passageway a detector is inserted such that a middle portion of the detector extends along the passageway as recited in Claim 35. Withdrawal of the rejection of Claim 35 is respectfully requested.

Claim 36 stands rejected under 35 USC §103 over the hypothetical combination of Wiktor with Forster. The Applicants respectfully submit that even if one skilled in the art were to hypothetically combine Wiktor with Forster as set forth in the rejection with respect to a heat shrink tubing surrounding a piezoelectric element, the structure resulting from that combination would still be completely different from the Applicants' Claim 36 for the reasons set forth above with respect to Claim 35. Withdrawal of the rejection is respectfully requested.

Claims 37-40 stand rejected under 35 USC §103 over the hypothetical combination of Rafei with Forster. The Applicants again note with appreciation the Examiner's detailed comments hypothetically applying that combination against Claims 37-40. The Applicants nonetheless respectfully submit that even if one skilled in the art were to make the hypothetical combination, the structure from that combination would result in a structure that is different from that recited in Claims 37-40. Reasons are set forth below.

The rejection frankly acknowledges that Forster does not teach measuring peak voltage of the electrical signal by peak holding processing and, when the peak voltages in a predetermined

range, determining that the feed rate is abnormal. Thus, the rejection turns to Rafei to cure this deficiency. The Applicants respectfully submit, however, that Rafei also does not disclose, teach or suggest the Applicants' claimed measuring peak voltage of the electrical system by peak holding process and, when the peak voltage is in a predetermined range, determining that the lubricant feed state is abnormal. The Applicants respectfully submit that Rafei teaches something quite different and actually leads one skilled in the art away from the Applicants' claimed subject matter.

In that regard, the Applicants invite the Examiner's attention to pages 2 and 4 of Rafei and paragraphs [0023] and [0036]. Those paragraphs are reproduced below for the Examiner's convenience as follows:

> The present invention recognizes various interrelationships among flow rate, temperature, and pressure and applies the corresponding signals 22, 26, and 30 to a monitor circuit 15. Monitor circuit 15 produces various signals as a function of these monitor signals 22, 26, and 30 to produce a substantially constant ratio providing a basis for detecting normal engine 10 operation so long as this ratio remains substantially constant. Monitor circuit 15 produces a shut down signal 140 when this ratio deviates from its expected substantially constant value. Monitor circuit 15 thereby protects engine 10 against damage due to lubrication system failure.
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> CNT signal 122 should remain, with an allowed narrow range, substantially constant. For a given engine configuration, i.e., expected range of temperature operation, physical size of lubrication pathway 14, lubrication fluid viscosity and expected range of flow rates during normal operation, a value for CNT can be derived by calculation or empirical measurement. Accordingly, an expected CNT block 130 provides an expected CNT signal 132 to a comparator 134. Comparator 134 also receives the actual CNT signal 122 as produced by electronic ratio resolver circuit 120. Comparator 134 allows some limited variation in signal 122 as compared to signal 132. However, upon variation outside such narrow range relative to the expected CNT signal 132, comparator 134 provides an alarm signal 136 to alarm/shut down block 138. Alarm/shut down block 138, in response to signal 136, produces an alarm which an operator may react to and manually shut down

> operation of machine 10. Alternatively, alarm/shut down block 138 couples directly to machine 10 and provides an automated shut down signal 140.

The monitor circuit 15 produces various signals as a function of monitor signals 22, 26 and 30 which are derived from flow rate, temperature and pressure. Those various signals are used to produce a substantially constant ratio which provides the basis for detecting normal engine operation so long as the ratio remains substantially constant. This is important. The monitor circuit 15 produces a shutdown signal 140 when the ratio deviates from its suspected substantially constant value. In other words, the signals produced are intended to remain substantially constant and only when there is some type of deviation does the shutdown signal 140 protect the engine from damage.

This is completely different from the Applicants' step of measuring peak voltage. Paragraph [0023] of Rafei does not measure peak voltage. Instead, it monitors a substantially constant value and when there is a deviation from that value, the shutdown signal is produced. There is utterly no reliance on a peak voltage and no suggestion to do so.

Moving then to paragraph [0036] of Rafei, there is again a completely different approach taken as compared to the Applicants. In that portion of the disclosure, a CNT signal 122 should remain within a very narrow range of "substantially constant." However, if there is a variation outside of the narrow range relative to the expected, established CNT signal, an alarm signal 136 is produced. Again, this is completely different from the Applicants' Claim 37 inasmuch as there is no measuring of the peak voltage. There is only measurement of a deviation from an expected norm. In other words, a "normal" range of values is set and when a voltage extends beyond the normal range, an alarm is set. The magnitude of the voltage of beyond the expected

range is unimportant in Rafei. This is sharply contrasted to the Applicants' claimed peak voltage that is measured.

Thus, it inherently follows that neither of the Rafei paragraphs [0023] and [0036] disclosures teaches that the peak voltage should be within yet another predetermined range that there is a determination that the lubricant feed state is abnormal. Thus, Rafei fails to disclose, teach or suggest the Applicants' claimed measuring peak voltage of the electrical signal by peak holding processing and, when the peak voltage is in a predetermined range, determining that the lubricant feed state is abnormal.

This means that even if one skilled in the art were to hypothetically combine Rafei with Forster, that the admitted deficiencies of Forster would still not be cured. Withdrawal of rejection of Claims 37-40 is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

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